Concept: $a^3 + b^3 + c^3 - 3abc$

$a^3+b^3+c^3-3abc = (a+b+c)(a^2+b^2+c^2-ab-bc-ca)$

$(a+b+c) = 0$

$(a^2+b^2+c^2-ab-bc-ca) = 0$

If $a+b+c=0$ then $\rightarrow$ $a^3+b^3+c^3-3abc=0$

OR

If $a=b=c$ then $\rightarrow$ $a^3+b^3+c^3=3abc$

If $a^3+b^3+c^3-3abc=0$

OR

$a^3+b^3+c^3=3abc$

then $\rightarrow a+b+c=0$

OR

$\rightarrow a=b=c$

$a^3 + b^3 + c^3 - 3abc = 0$ when $a + b + c = 0$

If $a+b-c=0$ then $a^3+b^3-c^3+3abc=0$

359. If $x = 2, y = 1$ and $z = -3$, then $x^3 + y^3 + z^3 - 3xyz$ is equal to

अगर $x = 2, y = 1$ और $z = -3$, तो $x^3 + y^3 + z^3 - 3xyz$ किसके समान है?

a) 6 b) 0 c) 2 d) 8

$x+y+z = 2+1-3 = 0$

360. If $a = 2.361, b = 3.263$ and $c = 5.624$, then the value of $a^3 + b^3 - c^3 + 3abc$ is

अगर $a = 2.361, b = 3.263$ और $c = 5.624$ है, तो $a^3 + b^3 - c^3 + 3abc$ का मान:

a) $(a-b)(b-c)^3 + (c-a)^3$

b) $3(a-b)(b-c)(c-a)$

c) 0

d) 1

$a + b - c = 0 \Longrightarrow$

36|. If $a = 4.36, b = 2.39$ and $c = 1.97$, then the value of $a^3 - b^3 - c^3 - 3abc$ is

4 36

अगर $a = 4.36, b = 2.39$ और $c = 1.97$ है, तो $a^3 - b^3 - c^3 - 3abc$ का मान:

a) 3.94 b) 2.39 ~~c) 0~~ d) 1

$a - b - c = 0 \Rightarrow a^3 - b^3 - c^3 - 3abc = 0$

$-$ $-$

$+$

362. If $a = 1.732, b = 3.217$ and $c = -4.949$, then the value of $a^3 + b^3 + c^3 + 3abc$ is

अगर $a = 1.732, b = 3.217$ और $c = -4.949$ है, तो $a^3 + b^3 + c^3 + 3abc$ का मान:

a) 0 b) $6abc$ c) $3abc$ d) $-6abc$

3abc

If $a+b+c=0 \Rightarrow a^3+b^3+c^3-3abc=0$

OR

$a^3+b^3+c^3=3abc$

363. If $a = 4.12, b = 1.73$ and $c = 5.85$, then the value of $a^3 + b^3 - c^3 - 3abc$ is

$-3abc$

अगर $a = 4.12, b = 1.73$ और $c = 5.85$ है, तो $a^3 + b^3 - c^3 - 3abc$ का मान:

a) 0 b) $6abc$ c) $3abc$ d) $-6abc$

$a+b-c=0$

$a^3+b^3-c^3+3abc=0$

$a^3+b^3-c^3=-3abc$

364. If $x + y + z = 0$, then $\frac{x^2}{yz} + \frac{y^2}{zx} + \frac{z^2}{xy} = ?$

अगर $x + y + z = 0$ है तो $\frac{x^2}{yz} + \frac{y^2}{zx} + \frac{z^2}{xy} = ?$

a) $(xyz)^3$ b) $x^2 + y^2 + z^2$ c) 9 d) 3

$$\frac{x^3+y^3+z^3}{xyz} \leftarrow \frac{3xyz}{xyz}$$

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365. If $x + y = z$, then the expression $x^3 + y^3 - z^3$ will be equal to
अगर $x + y = z$ है, तो $x^3 + y^3 - z^3$ का मान:

a) 0 b) $3xyz$ c) $-3xyz$ d) z^3

If $x+y-z=0 \Rightarrow x^3+y^3-z^3+3xyz=0$

$p+q-r=0$

$\Rightarrow p^3+q^3-r^3=-3pqr$

$=-3\times30$

366. If p, q and r be such that $p+q=r$ and $pqr=30$, then what is the value of $p^3+q^3-r^3$

यदि p, q और r ऐसा हो कि $p+q=r$ और $pqr=30$ हो, तो $p^3+q^3-r^3$ का मान क्या है:

a) 0 b) 90

c) -90 d) Cannot be determined

367. If $a^{\frac{1}{3}} + b^{\frac{1}{3}} + c^{\frac{1}{3}} = 0$, then a relation among a, b, c is :

अगर $a^{\frac{1}{3}} + b^{\frac{1}{3}} + c^{\frac{1}{3}} = 0$ है तो a, b, c में क्या सम्बन्ध है?

a) $a + b + c = 0$

b) $(a + b + c)^3 = 27abc$

c) $a + b + c = 3abc$

d) $a^3 + b^3 + c^3 = 0$

$x^3 + y^3 + z^3 = 3xyz$

$\Rightarrow a + b + c = 3\, a^{\frac{1}{3}}\, b^{\frac{1}{3}}\, c^{\frac{1}{3}}$

$\Rightarrow (a+b+c)^3 = 27\, abc$

368. If $a^{\frac{1}{3}} + b^{\frac{1}{3}} + c^{\frac{1}{3}} = 0$, then $(a+b+c)^6$ is equal to:

यदि $a^{\frac{1}{3}} + b^{\frac{1}{3}} + c^{\frac{1}{3}} = 0$ है, तो $(a+b+c)^6 = ?$

a) $81abc$ b) $729a^2b^2c^2$ c) $729abc$ d) $81a^2b^2c^2$

$x \quad y \quad z$

$$x^3+y^3+z^3 = 3xyz$$

$$a+b+c = 3\,a^{\frac{1}{3}}\,b^{\frac{1}{3}}\,c^{\frac{1}{3}}$$

$$\Rightarrow (a+b+c)^3 = 27abc$$

$$\Rightarrow (a+b+c)^6 = 729a^2b^2c^2$$

369. If $a^3 - b^3 - c^3 = 0$ then $a^9 - b^9 - c^9 - 3a^3b^3c^3$ is

यदि $a^3 - b^3 - c^3 = 0$ है, तो $a^9 - b^9 - c^9 - 3a^3b^3c^3$ है :

a) 1 b) 2^z c) 0 d) -1

$x - y - z = 0 \implies x^3 - y^3 - z^3 = 3xyz$

$a^9 - b^9 - c^9 = 3a^3b^3c^3$

Telling $a + b + c = 0$ in diff ways

370. If $x = a - b, y = b - c, z = c - a$, then the numerical value of the algebraic expression $x^3 + y^3 + z^3 - 3xyz$

अगर $x = a - b, y = b - c, z = c - a$ है तो $x^3 + y^3 + z^3 - 3xyz$ का मान:

a) $a + b + c$ b) 0 c) $4(a + b + c)$ d) $3abc$

$x+y+z=0$

371. If $x = a(b-c),\ y = b(c-a),\ z = c(a-b)$ then the value of $\left(\frac{x}{a}\right)^3 + \left(\frac{y}{b}\right)^3 + \left(\frac{z}{c}\right)^3$ is:

अगर $x = a(b-c),\ y = b(c-a),\ z = c(a-b)$ है तो $\left(\frac{x}{a}\right)^3 + \left(\frac{y}{b}\right)^3 + \left(\frac{z}{c}\right)^3$ का मान:

a) $\frac{xyz}{abc}$ b) 0 c) $\frac{3xyz}{abc}$ d) $\frac{2xyz}{abc}$

$\frac{x}{a} = b-c \quad \frac{y}{b} = c-a \quad \frac{z}{c} = a-b$

$\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 0$

$3 \times \frac{x}{a} \times \frac{y}{b} \times \frac{z}{c}$

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३७2. If $x = (a + b - c), y = (b + c - a) \& z = (c + a - b)$, then $(x - a)^3 + (y - b)^3 + (z - c)^3 = ?$

यदि $x = (a + b - c)$, $y = (b + c - a)$ और $z = (c + a - b)$ है, तो $(x - a)^3 + (y - b)^3 + (z - c)^3$ का मान ज्ञात करें |

a) $3(a - b)(b - c)(c - a)$
b) $3xyz$
c) $(x - a)(y - b)(z - c)$
d) $3abc$

$(x-a) = b-c$

$(y-b) = c-a$

$(z-c) = a-b$

$3(x-a)(y-b)(z-c)$

$= 3(b-c)(c-a)(a-b)$

373. If $x = (b-c)(a-d), y = (c-a)(b-d), z = (a-b)(c-d)$, then the value of $x^3 + y^3 + z^3$ is equal to:

यदि $x = (b-c)(a-d), y = (c-a)(b-d), z = (a-b)(c-d)$ है, तो $x^3 + y^3 + z^3$ का मान बराबर है :

a) xyz b) $2xyz$ c) $3xyz$ d) $-3xyz$

$x = ba - bd - ca + cd$

$y = cb - cd - ab + ad$

$+ \quad z = ac - ad - bc + bd$

$x + y + z = 0$

३७५. $(a+b-2c)^3+(b+c-2a)^3+(c+a-2b)^3$ is equal to:

$(a+b-2c)^3+(b+c-2a)^3+(c+a-2b)^3$ बराबर है :

a) $(a+b-2c)(b+c-2a)(c+a-2b)$

b) $2(a+b-2c)(b+c-2a)(c+a-2b)$

c) $3(a+b-2c)(b+c-2a)(c+a-2b)$

d) $-3(a+b-2c)(b+c-2a)(c+a-2b)$

3(

375. If $x + y + z = 6$, then the value of $(x-1)^3 + (y-2)^3 + (z-3)^3$ is

अगर $x + y + z = 6$ है तो $(x-1)^3 + (y-2)^3 + (z-3)^3$ का मान:

a) $3(x-1)(y+2)(z-3)$ b) $3(x+1)(y-2)(z-3)$

c) $3(x-1)(y-2)(z+3)$ d) $3(x-1)(y-2)(z-3)$

$a+b+c = x-1+y-2+z-3$

$= x+y+z-6$

$= 6$

$= 0$

376. Out of given responses one of the factors of $(a^2-b^2)^3+(b^2-c^2)^3+(c^2-a^2)^3$ is

निम्न में से कौनसा $(a^2-b^2)^3+(b^2-c^2)^3+(c^2-a^2)^3$ का एक गुणनखंड है?

a) $(a+b)(b-c)$ b) $(a+b)(a+b)$

c) $(a-b)(a-b)$ d) $(b-c)(b-c)$

$x+y+z=0$

$3(a^2-b^2)(b^2-c^2)(c^2-a^2)$

$= (a+b)(a-b)(b+c)(b-c)(c+a)(c-a)$

377. The value of $\left[(a^2-b^2)^3+(b^2-c^2)^3+(c^2-a^2)^3\right] \div \left[(a-b)^3+(b-c)^3+(c-a)^3\right]$ is equal to : $(given\ a \neq b \neq c)$

$\left[(a^2-b^2)^3+(b^2-c^2)^3+(c^2-a^2)^3\right] \div \left[(a-b)^3+(b-c)^3+(c-a)^3\right]$ का मान किसके बराबर है:

a) $(a+b)(b+c)(c+a)$

b) $(a^2-b^2)(b^2-c^2)(c^2-a^2)$

c) $(a^2+b^2)(b^2+c^2)(c^2+a^2)$

d) $(a-b)(b-c)(c-a)$

$$\frac{3(a^2-b^2)(b^2-c^2)(c^2-a^2)}{3(a-b)(b-c)(c-a)}$$

(a+b)

$$\frac{5}{2} \times \frac{3(a^6-b^6)(b^6-c^6)(c^6-a^6)}{3(a^3-b^3)(b^3-c^3)(c^3-a^3)}$$

$(a^3+b^3)(a^3-b^3)$

378. **Simplify the following expression.**
निम्न व्यंजक को सरल करें|

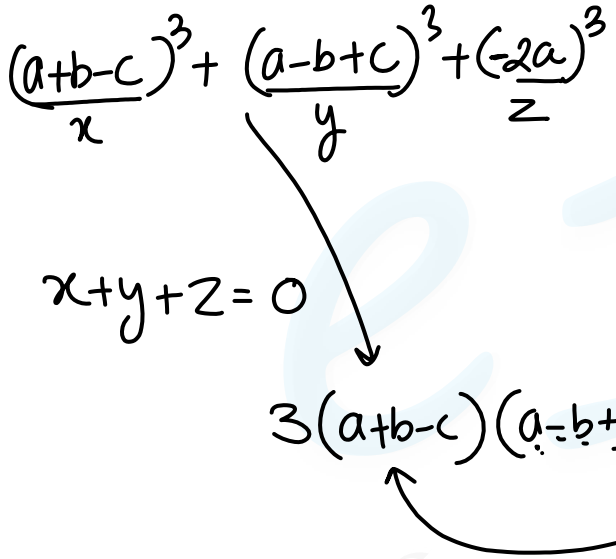
$$\frac{5(a^6-b^6)^3+5(b^6-c^6)^3+5(c^6-a^6)^3}{2(a^3-b^3)^3+2(b^3-c^3)^3+2(c^3-a^3)^3}$$

a) $\frac{5}{2}(a^3+b^3)(b^3-c^3)(c^3-a^3)$

b) $\frac{5}{2}(a^3+b^3)(b^3+c^3)(c^3+a^3)$

c) $\frac{5}{2}(a^3-b^3)(b^3-c^3)(c^3+a^3)$

d) $\frac{5}{2}(a^3-b^3)(b^3+c^3)(c^3+a^3)$



379. The expression $(a+b-c)^3+(a-b+c)^3-8a^3$ is equal to:

व्यंजक $(a+b-c)^3+(a-b+c)^3-8a^3$ इसके बराबर है:

a) $6a(a-b+c)(c-a-b)$

b) $3a(a+b-c)(a-b+c)$

c) $6a(a+b-c)(a-b+c)$

d) $3a(a-b+c)(c-a-b)$

380. If $a^2 + b^2 = c^2$ then find $\frac{a^6+b^6-c^6}{a^2b^2c^2}$ =?

यदि $a^2+b^2=c^2$ है, तो $\frac{a^6+b^6-c^6}{a^2b^2c^2}$ का मान ज्ञात करो |

a) 3 b) -3 c) $3abc$ d) 1

$x+y-z=0$

$x^3+y^3-z^3=-3xyz$

$a^6+b^6+3a^2b^2c^2=c^6$

$a^6+b^6-c^6=-3a^2b^2c^2$

$\frac{-3a^2b^2c^2}{a^2b^2c^2}=-3$

381. If $a^2 + b^2 - c^2 = 0$, then the value of $\frac{2(a^6+b^6-c^6)}{3a^2b^2c^2}$ is:

अगर $a^2 + b^2 - c^2 = 0$, तो $\frac{2(a^6+b^6-c^6)}{3a^2b^2c^2}$ का मान है:

a) 2 b) -2

c) 1 d) 3

$$\frac{2(-3a^2b^2c^2)}{3a^2b^2c^2}$$

382 . If $x^a . x^b . x^c = 1$ then the value of $a^3 + b^3 + c^3$ is

अगर $x^a . x^b . x^c = 1$ है तो $a^3 + b^3 + c^3$ का मान

a) 9 b) abc c) a + b + c d) 3abc

$x^{a+b+c} = x^0$

$\Rightarrow a+b+c=0$

$a^m = a^n$

$\Rightarrow m=n$

$a^0 = 1$

$b^0 = 1$

$a^m \times a^n = a^{m+n}$

383. If $x+y+z=0$ then the value of $\left[\frac{y-z-x}{2}\right]^3+\left[\frac{z-x-y}{2}\right]^3+\left[\frac{x-y-z}{2}\right]^3$ is:

यदि $x+y+z=0$ है, तो $\left[\frac{y-z-x}{2}\right]^3+\left[\frac{z-x-y}{2}\right]^3+\left[\frac{x-y-z}{2}\right]^3$ का मान है :

a) $24xyz$ b) $-24xyz$ c) $3xyz$ d) xyz

$z+x=-y$

$$a+b+c=\frac{y-z-x+z-x-y+x-y-z}{2}=\frac{-(x+y+z)}{2}=0$$

$-2y$ 2

$=-y-(z+x)$

$$3\left(\frac{y-z-x}{2}\right)\left(\frac{z-x-y}{2}\right)\left(\frac{x-y-z}{2}\right)$$

$$=\frac{3}{8}\cdot 2y\cdot 2z\cdot 2x=3xyz$$

384. If $x = \frac{p+q+r}{3}$, then find $(x-p)^3 + (x-q)^3 + (x-r)^3 - 3(x-p)(x-q)(x-r)$.

यदि $x = \frac{p+q+r}{3}$ है, तो $(x-p)^3 + (x-q)^3 + (x-r)^3 - 3(x-p)(x-q)(x-r)$ ज्ञात करो।

a) pqr b) $p+q+r$ c) 0 d) 3

$3x = p+q+r$

$a+b+c = 3x-(p+q+r) = 0$

$\Rightarrow (x-p)+(x-q)+(x-r) = 0$

385. The value of $\frac{(0.545)(0.081)(0.51)(5.2)}{(0.324)^3+(0.221)^3-(0.545)^3}$ is:

$\frac{(0.545)(0.081)(0.51)(5.2)}{(0.324)^3+(0.221)^3-(0.545)^3}$ का मान पता करे?

a) -1 b) 1 c) 3 d) -3

$a+b-c=0 \Rightarrow a^3+b^3-c^3=-3abc$

$\frac{.545 \times .081 \times .51 \times 5.2}{-3 \times .324 \times .221 \times .545} = -1$

386. The value of expression $\frac{(a-b)^2}{(b-c)(c-a)}+\frac{(b-c)^2}{(a-b)(c-a)}+\frac{(c-a)^2}{(a-b)(b-a)}$

$\frac{(a-b)^2}{(b-c)(c-a)}+\frac{(b-c)^2}{(a-b)(c-a)}+\frac{(c-a)^2}{(a-b)(b-a)}$ का मान:

a) 0 b) 3 c) $\frac{1}{3}$ d) 2

$$\frac{(a-b)^3+(b-c)^3+(c-a)^3}{(a-b)(b-c)(c-a)}$$

$$= \frac{3(a-b)(b-c)(c-a)}{(a-b)(b-c)(c-a)} = 3$$

287. If $x + y + z = 0$, then the value of $\frac{(x+y)^3+(y+z)^3+(z+x)^3-17xyz}{10(x+y)(y+z)(z+x)}$ is:

यदि $x + y + z = 0$ है, तो $\frac{(x+y)^3+(y+z)^3+(z+x)^3-17xyz}{10(x+y)(y+z)(z+x)}$ का मान है :

a) $3xyz$ b) 4 c) 0 d) 2

$a+b+c = 2(x+y+z) = 0$

$x+y+z=0$

$\Rightarrow x+y=-z$

$\Rightarrow y+z=-x$

$\Rightarrow z+x=-y$

$$= \frac{3(x+y)(y+z)(z+x)-17xyz}{10(x+y)(y+z)(z+x)}$$

$$= \frac{-3xyz-17xyz}{-10xyz} = \frac{-20xyz}{-10xyz} = 2$$